

PATENT
Docket 24NORDAM4

REMARKS

Reconsideration of the above identified application is respectfully requested.

Para. 9 of the specification has been amended to substitute the issued US patent for the corresponding application number.

Para. 30 has been amended to delete the extraneous period mid-sentence, and remove the corresponding hard return.

Para. 33 has been amended to delete the extraneous word "which" to correct sentence syntax.

Applicant traverses the objection to the drawing under Rule 84(p)(4).

The drawings require that the features of the invention be suitably illustrated. However, the "air" referred to by the examiner in the drawing objection is not a feature of the invention, it is only the working fluid.

And, the air is identified by the single numeral 32 because the air is a single element, which is initially split as it enters the nacelle and flows both inside the engine and outside the engine and then rejoins at the nozzle exit, irrespective of its condition, such as pressure.

Accordingly, withdrawal of the drawing objection is warranted and is requested.

Correspondingly, Applicant also traverses the objection to the specification since both the freestream air and fan air are nevertheless the same air, and are therefore commonly designated using the same numeral 32. That air is also the working fluid for the claimed exhaust nozzle and is not a element thereof in accordance with standard claim interpretation practice.

Withdrawal of the objection to the specification is therefore warranted and is requested.

In this regard, this attorney conducted a brief phone

PATENT
Docket 24NORDAM4

interview with the examiner on April 4th to discuss the drawing objection, and the examiner agreed to withdraw the objection based on the reasons presented above.

However, should the examiner feel that a drawing amendment would nevertheless be warranted or desirable, then Applicant would favorably consider submitting at a later date a suitable drawing amendment, and corresponding amendment to the specification to provide different designations for the inside and outside air for the engine.

The brief phone interview also addressed claim 1 and reference Corson. No agreement was reached in this regard, except that Applicant would present an amendment response to further distinguish over this reference.

Applicant traverses the rejection of claim 1 under Section 102(b) over Corson.

Applicant notes the substantial breadth of interpretation of Applicant's claims being proffered by the examiner, which correspondingly enlarges claim scope in later infringement analysis of the file wrapper. However, the examiner has failed to afford due weight to specific features and cooperation of features which distinguish over the applied art.

Claim 1 recites an exhaust nozzle 38 having main and secondary outlets 46,48 which collectively discharge the exhaust flow from the engine without obstruction.

The cascade plug nozzle 10 of Corson is fundamentally different since it is expressly a plug nozzle which provides substantial flow obstruction for noise attenuation at the considerable price of aerodynamic performance loss.

Corson expressly discloses that the nozzle 10 includes a cascade of ring segments 16, four being illustrated in figure 2, terminating in a center plug 18. The segments define the five cascade channels 20.

The examiner's broad interpretation of claim 1 attempts to redefine the nozzle 10 of Corson into multiple nozzles, of

PATENT
Docket 24NORDAM4

which only the first annular ring 16 is being used by the examiner. And, the examiner's interpretation of Corson fails to afford due weight to the meaning of and differences between the main and secondary outlets 46,52 recited in claim 1.

Claim 1 recites the main outlet 46 at the aft end of the nacelle. But the aft end of the nozzle 10 illustrated in figure 2 of Corson is not the first ring 16 as the examiner contends, but the plug 18 clearly shown at the aft end of the nozzle, with that first ring 16 being located well forward thereof.

The first two channels 22(a,b) being used by the examiner clearly discharge only a portion of the exhaust flow, and second channel 22b is clearly not a main outlet, but would appear to be a minor outlet in comparison with the first channel 22a in the embodiments shown in Corson.

Furthermore, the two channels 22a,b clearly discharge only a minor portion of the exhaust flow, as compared with all five channels shown, and therefore do not collectively discharge the exhaust flow from the nozzle.

Claim 1 further recites that the secondary bypass duct 48 has an unobstructed secondary inlet 50; yet the many channels 20 in Corson all have inlets obstructed by the spider 24 which extends radially inwardly therein for supporting the multiple ring segments 16.

However, in view of the examiner's broad interpretation of claim 1, Applicant has chosen to place claim 2 in independent form as suggested by the examiner for the allowable subject matter therein, and claim 1 has been amended to emphasize the differences presented above.

In particular, claim 1 has been amended to recite that the main outlet 46 is at the axially opposite aft end of the nozzle 16 as introduced at para. 24.

The main and secondary outlets 46,52 are complementary in discharge flow area to collectively discharge the entire

PATENT
Docket 24NORDAM4

flow from the main duct 36 as disclosed at paras. 31 & 42.

In Corson, all five channels 20 are required for discharging the exhaust flow, which flow is nevertheless blocked or obstructed by the plug 18 at the aft end of the nozzle 10.

Although Corson discloses confluent streams as the examiner contends, there are five such streams in Corson effected by the four ring segments 16 and plug 18 which provide a substantial flow blockage, and lack the simplicity of the main and secondary outlet configuration recited in claim 1.

Accordingly, withdrawal of the rejection of claim 1 under Section 102(b) over Corson is warranted and is requested.

Applicant traverses the rejection of claim 15 under Section 103(a) over Corson and Smith et al.

Independent claim 15, like claim 1, recites the main and secondary outlets 46,52 to collectively discharge the exhaust flow, and therefore is not disclosed by Corson for the reasons presented above.

Claim 15 further recites that the nozzle is configured for a turbofan engine and has two outlets that are sized in flow area to collectively discharge the exhaust flow at the cruise design point of the turbofan engine.

The examiner admits the shortcomings of Corson, and attempts to combine therewith reference Smith without explanation as to what that combination would be, and without the requisite showing of legal motivation.

The examiner has failed to explain any technical similarity between the disparate references, failed to explained any problem being solved by the proposed combination, and overlooks the adverse affects of combining the two references.

In Corson, the multi-ring nozzle 10 effects substantial flow blockage of the exhaust flow, and where is any teaching

PATENT
Docket: 24NORDAM4

that the plug nozzle 10 of Corson would provide any benefit in plugging up the outlet of Smith?

The examiner offers the combination of Corson and Smith "to obtain a high thrust aircraft engine," but, to the contrary, the use of the plug nozzle 10 of Corson would not increase thrust, but would decrease thrust in view of the major blockage provided by the many rings and plug itself.

Claim 15 also recites sizing the two outlets to collectively discharge the exhaust flow at the cruise design point.

The examiner's contention regarding the cruise design point is mere speculation, is not supported by any evidence, and is not based on any teaching in the two references being applied.

The "maximum performance and efficiency" contention proffered by the examiner is clearly not consistent with the plug nozzle of Corson which would have poor performance and efficiency due to the substantial flow blockage of the plug nozzle.

The examiner overlooks the fact in Corson that noise suppression comes at a high price therein due to the major blockage of exhaust flow by the plug nozzle.

Accordingly, withdrawal of the rejection of claim 15 under Section 103(a) over Corson and Smith et al is warranted and is requested.

To emphasize the major difference in the turbofan nozzle recited in claim 15 over the applied references, claim 15 has been amended so that the two outlets 46,52 collectively discharge the exhaust flow in only two corresponding streams as disclosed at para. 42, for example.

The multiple discharge channels 20 of Corson are created by the multiple rings 16 and end plug 18 which block exhaust flow and substantially diminish efficiency and performance of the engine in the attempt to suppress noise.

Applicant's claim 15, in contrast, recites a relatively

PATENT
Docket 24NORDAM4

simple confluent exhaust nozzle having noise suppression capability while reducing base drag, without plugging or blocking the free flow of the exhaust as would incur in the plug nozzle of Corson.

Applicant notes the allowability of claims 2-14 and 16-25. Claim 2 has been amended in independent form to maintain its correspondingly broad scope in view of the examiner's broad interpretation of the claims. And, claims 16-25 have not been further amended, other than as presented in independent claim 15 from which they depend.

In accordance with the duty imposed by 37 CFR 1.104 and MPEP sections 707, 707.05, 707.07, and 707.07(g), the examiner is requested to reconsider all the art of record, including the additional references not applied, to ensure full compliance with the required thoroughness of examination.

In re Portola Packaging, Inc., 42 USPQ2d 1295 (Fed. Cir. 1997) emphasizes the importance of complying with this duty to ensure that all references of record have been fully considered by the examiner in the various combinations thereof. And, the Board of Appeals has further elaborated on the importance of this examiner duty in Ex parte Schricker, 56 USPQ2d 1723 (B.P.A.I. 2000).

In view of the above remarks, allowance of all claims 1-25 over the art of record is warranted and is requested.

Respectfully submitted,



Francis L. Conte
Registration No. 29,630
Attorney for Applicant

Date: 6 April 2005

6 Puritan Avenue
Swampscott, MA 01907
Tel: 781-592-9077
Fax: 781-592-4618